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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,458

06/03/2005

Eliahu Kritchman

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EXAMINER

WIECZOREK, MICHAEL P

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

06/03/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/537,458	Applicant(s) KRITCHMAN ET AL.	
	Examiner Michael Wieczorek	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 197-201 and 203-219 is/are pending in the application.
- 4a) Of the above claim(s) 209-219 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 197-201 and 203-208 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/20/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 11, 2009 has been entered.

Response to Arguments

2. Applicant's arguments, see pages 6 and 7, filed May 11, 2009, with respect to the rejection(s) of claim(s) 197-201 and 203-208 under 102(b) and 103(a) have been fully considered and are persuasive over the previously presented arguments. However, upon further consideration, a new ground(s) of rejection is made in view of the previously presented prior art references Leyden et al and Jang et al as is discussed below.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 197-201 and 203-208 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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5. Claim 197 has been amended to disclose “that the upper layer remain in a flowable state”.

Based on the claims as currently presented it is not clear on how long of a time the upper layers “remain” in a flowable state. Paragraph 100 on page 26 of the specification, from which the amended claim 197 has support for, discloses an embodiment where the upper layers remain flowable during the UV curing process of the layers but this contradicts with claim 198 which discloses that the controlling of the layers so that they remain in a flowable state is conducted during the printing process. Clarification on this issue is requested.

6. Claims 198 and 204-208 disclose the limitation “said layers”. It is not clear what the limitation “said layers” refers to as claim 197 from which claims 198 and 204-08 depend on, discloses layers deposited onto the printing tray and the upper layers. For the purposes of this examination the “said layers” limitation will be considered to be any layer that has been deposited during the printing method. Clarification on this issue is requested.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 197-200 and 203-207 are rejected under 35 U.S.C. 102(b) as being taught by Leyden et al (U.S. Patent # 6,193,923).

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Leyden et al teaches a method of forming a three dimensional object by dispensing a flowable material onto a printing tray in the form of a support platform (Column 55 Lines 39-45).

Leyden et al further teaches that during the printing process or object formation process the layers of the partially formed object are kept at different temperatures and that there is a temperature gradient across the partially formed object (Column 40 Lines 7-49). Furthermore, Leyden et al teaches that that the partially formed object has a negative temperature gradient where the upper layers are at a higher temperature than the lower layers and that the latest formed layers (i.e. two or more of the upper layers) are at a temperature high enough to result in minimal curl and other distortions (Column 41 Lines 22-28) and Leyden et al teaches that this temperature is above the glass transition temperature of the material (Column 41 Lines 47-59) and thus the upper layers remain in a flowable state during the time that those layers are considered upper layers of the partially formed object.

As for claim 198, as was discussed above, Leyden et al teaches that the controlling of the layer temperatures is conducted during the dispensing of the layers. Since Leyden et al teaches that the layers of material are being dispensed by a printing apparatus (Column 11 Lines 44-56 and Column 12 Lines 40-44) the temperature is being controlled during a printing process.

As for claim 199, Leyden et al teaches that the taught method is used for depositing building material, the material used to build the three dimensional object, and support material, material used to building supports for supporting the partially formed object (Column 7 Line 64 through Column 8 Line 56). Thus Leyden et al teaches depositing more than one material, building material and support material.

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As for claim 200, since Leyden et al teaches dispensing or jetting hot melt inks like thermal plastics or wax-like materials in a flowable state to build the three dimensional object (Column 12 Lines 40-54), thus it would be inherent that the materials for forming the layers where heated before deposition.

As for claims 203, Leyden et al teaches controlling the temperature of the last formed layers, thus the lower layer of the partially formed object, to be above room temperature but at a build temperature which is below a solidification or glass phase transition temperature for the material (Column 40 Line 64 through Column 41 Line 21).

As for claims 204 through 206, the invention taught by Leyden et al comprises a cooling element in the form of a cooling system and one taught embodiment of this cooling system are blowing and sucking devices in the form of blowing and sucking ducts to used cool the material, thus controlling the temperatures, of the dispensed material using a cooling gas such as air (Column 12 Lines 15-39). Thus Leyden et al teaches that the temperature of the layers is controlled by a cooling element in the form of an air sucking unit and an air blowing unit.

As for claim 207, Leyden et al teaches that the cooling element is operated according to a temperatures sensing device (Column 12 Lines 1-5), thus Leyden et al teaches that the cooling element is operated according to a reading received from a temperature sensor.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 201 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leyden et al as applied to claim 197 above, and further in view of Jang et al (U.S. Patent # 6,165,406).

The teachings of Leyden et al as they apply to claim 197 have been discussed previously. Furthermore, as was discussed in the rejection of claim 203, Leyden et al teaches controlling the temperature of the lower layers to be at a temperature below the glass phase or solidification temperature but above room temperature it does not teach heating the printing tray or support platform.

Jang et al teaches a process and apparatus for making a three-dimensional object by depositing onto a printing tray in the form of a support platform droplets of multiple liquid compositions containing a solidifiable baseline body-building material and different colorants. The taught process involves depositing the material droplets to form multiple layers onto the support platform. (Abstract)

Jang et al further teaches heating the support platform or printing tray with a heating element to control the solidification behavior of the deposited material (Column 12 Lines 58-63).

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Thus at the time the present invention was made it would have been obvious to one having ordinary skill in the art to heat the printing tray. Jang et al teaches providing heating elements to heat the printing tray or support platform to control the temperature and solidification behavior of the deposited layers. As was discussed above Leyden et al teaches controlling the temperature of the deposited lower layers to be above room temperature thus it would have been obvious to one of ordinary skill based on the teachings of Jang et al to provide heating elements to the invention of Leyden et al in order to heat the printing tray or support platform in order to control the temperature of the lower deposited layers.

12. Claim 208 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leyden et al as applied to claim 197 above, and further in view of Wilkening et al (U.S. Patent # 5,908,569).

The teachings of Leyden et al as they apply to claim 197 have been discussed previously. Furthermore, as was taught previously the invention of Leyden et al teaches maintaining and controlling the temperature of the layers of the partially formed object, specifically controlling the temperatures so that they are elevated above room temperature or solidification/glass phase transition temperature, but Leyden et al does not teach that this is accomplished by operating heating elements nor that the heating elements are operated according to readings received from a temperature sensor.

Wilkening et al teaches an invention related to producing three-dimensional objects comprising a heating apparatus 8 used for heating a solidifiable material 7 used for building a three-dimensional object (Abstract and Figure 1). The heating apparatus of Wilkening et al further comprises a control device 84 for controlling the heat output of the heating apparatus

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(Column 2 Lines 49-54), thus controlling the temperature of the material layers, and a temperature sensor 90 (Column 3 Lines 31-36). Thus Wilkening et al teaches an invention comprising heating elements which are operated according to readings received from a temperature sensor.

At the time the present invention was made it would have been obvious to one having ordinary skill in the art to control the temperature of the layers by operating heating elements according to readings received from a temperature sensor. It would have been obvious to one of ordinary skill in the art to use the heating apparatus teachings of Wilkening et al to heat the material layers of the three-dimensional object produced by the method of Leyden et al in order to produce and control the elevated temperature requirements of the material layers.

Conclusion

Claims 197 through 201 and claims 203 through 208 were rejected and claims 209 through 219 were withdrawn. No claims were allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wiczorek whose telephone number is (571)270-5341. The examiner can normally be reached on Monday through Friday; 7:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MPW/

/Michael Wieczorek/
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792